**CLAIMS:**

What is claimed is:

5   1.  A song-matching system providing real-time, dynamic recognition of a song being sung and providing an audio accompaniment signal in synchronism therewith, comprising:

a song database having a repertoire of songs, each song of the database being stored as a relative pitch

10   template;

an audio processing module operative in response to the song being sung to convert the song being sung into a digital signal;

an analyzing module operative in response to the

15   digital signal to determine a definition pattern representing a sequence of pitch intervals of the song being sung that have been captured by the audio processing module;

a matching module operative to compare the definition

20   pattern of the song being sung with the relative pitch template of each song stored in the song database to recognize one song in the song database as the song being sung;

the matching module being further operative to cause

25   the song database to download the unmatched portion of the relative pitch template of the recognized song as a digital accompaniment signal; and

a synthesizer module operative to convert the digital accompaniment signal to the audio accompaniment signal that

30   is transmitted in synchronism with the song being sung.

2.  The song-matching system of claim 1 wherein the audio accompaniment signal comprises yet to be sung original sounds of the recognized song.

35

21

3. The song-matching system of claim 1 wherein the audio accompaniment signal comprises a harmony accompaniment.

4. The song-matching system of claim 1 wherein the audio
5   accompaniment signal comprises a melody accompaniment.

5. The song-matching system of claim 1 wherein the audio accompaniment signal comprises an instrumental accompaniment.
10

*6.* 7. The song-matching system of claim 1 wherein the audio accompaniment signal comprises a non-articulated accompaniment.

15 *7 8.* The song-matching system of claim 1 wherein the matching module implements one or more one pattern-matching events wherein each song of the database is assigned a correlation score based upon the comparison of the definition pattern with its relative pitch template and
20   processes the correlation scores until a single correlation score meets or exceeds a predetermined confidence level, wherein the one song in the song database corresponding to the song being sung is recognized.

25 *9 8.* The song-matching system of claim 1 further comprising:
        a pitch-adjusting module operative to adjust the pitch of the digital accompaniment signal to be substantially the same as the pitch of the song being sung wherein the audio accompaniment signal is transmitted from the output device
30   in synchronism with and at substantially the same pitch as the song being sung.

*9 10.* The song-matching system of claim 1 wherein the matching module is operative to compare in parallel the
35   definition pattern of the song being sung with the relative

22

pitch templates of all of the songs in the song database to recognized the one song in the song database as the song being sung.

*10*

5   11. A song-matching system providing real-time, dynamic recognition of a song being sung and providing an audio accompaniment signal in synchronism therewith, comprising:

a song database having a repertoire of songs, each song of the database being stored as a relative pitch
10  template;

an audio processing module operative in response to the song being sung to convert the song being sung to a digital signal;

an analyzing module operative in response to the
15  digital signal to determine a definition pattern representing a sequence of pitch intervals of the song being sung that has been captured by the audio processing module;

a matching module operative to compare the definition
20  pattern of the song being sung with the relative pitch template of each song stored in the song database to recognize one song in the song database as the song being sung;

the matching module being further operative to cause
25  the song database to download the unmatched portion of the relative pitch template of the recognized song as a digital accompaniment signal;

a pitch-adjusting module operative to adjust the pitch of the digital accompaniment signal to be substantially the
30  same as the pitch of the song being sung; and

a synthesizer module operative to convert the pitch-adjusted digital accompaniment signal to a pitch-adjusted audio accompaniment signal and to transmit the pitch-adjusted audio accompaniment signal in synchronism with and
35  at substantially the same pitch as the song being sung.

11.

10

12. The song-matching system of claim 11 wherein the matching module is operative to compare in parallel the definition pattern of the song being sung with the

5　sequences of pitch events of all of the songs in the song database to recognize the one song in the song database as the song being sung.

12

13. A real-time, dynamic recognition method for

10　recognizing a song being sung and providing an audio accompaniment signal in synchronism therewith utilizing a song-matching system, comprising the steps of:

　　providing a song database for the song-matching system having a repertoire of songs wherein each song is stored in

15　the song database as a relative pitch template;

　　converting the song being sung to a digital signal;

　　analyzing the digital signal to determine a definition pattern for the song being sung representing a sequence of pitch intervals of the sung being sung that have been

20　captured by the song-matching system;

　　comparing the definition pattern of the song being sung with the relative pitch template of each song stored in the song database to recognize one song in the song database corresponding to the song being sung;

25　　downloading the unmatched portion of the relative pitch template of the recognized song as a digital accompaniment signal;

　　converting the digital accompaniment signal to the audio accompaniment signal; and

30　　transmitting the audio accompaniment signal from an output device in synchronism with the song being sung.

13

12

14. The method of claim 13 wherein the comparing step comprises:

Implementing one or more pattern-matching events
wherein each song of the database is assigned a correlation
score based upon the comparison of the definition pattern
with its relative pitch template; and

5    Processing the correlation scores until a single
correlation score meets or exceeds a predetermined
confidence level wherein the single correlation score
defines the one song in the song database recognized as the
song being sung.

10   *14*

*12*

~~15~~. The method of claim ~~16~~ further comprising the step of:
adjusting the pitch of the digital accompaniment
signal to be substantially the same as the pitch of the
song being sung wherein the audio accompaniment signal
15   transmitted from the output device is in synchronism with
and at substantially the same pitch as the song being sung.